Case Study:
McDowell County, West Virginia, and Letcher County, Kentucky

By Gary A. O'Dell[37]

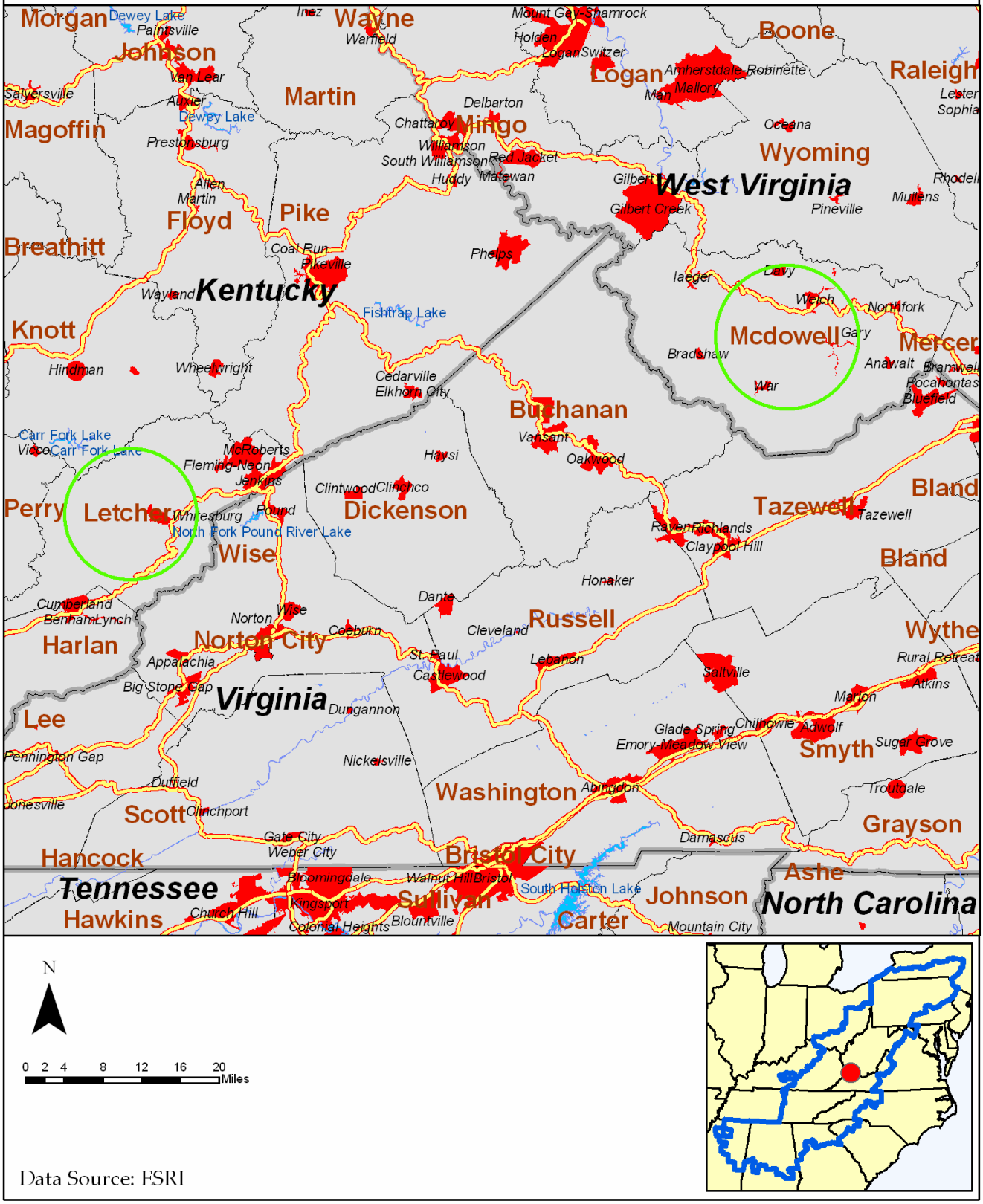
Among the distressed counties at the core of central Appalachia, in the southern coalfields of the Allegheny/Cumberland Plateau, are McDowell County, West Virginia, and Letcher County, Kentucky (refer to Figure E-5). As in many parts of Appalachia, much of the population in these counties has neither a reliable water supply of good quality nor an effective means of wastewater disposal. Many rural neighborhoods comprising hundreds of families have never had access to any public water system.[38] Such households have, by necessity, been obliged to develop any water sources locally available. Individual water supplies are obtained from wells, springs, and rainwater collection, or by purchase of transported water.

---

[37] Gary A. O'Dell is assistant professor of geography at Morehead State University (Kentucky). He thanks the many citizens and officials who provided information and insights concerning water and wastewater development issues. Particular appreciation is due to (West Virginia) Shirley Auville, Bill Baird, David Cole, Al Corolla, Lawrence Crigger, Kirk Easterling, Dr. Thomas C. Hatcher, David Hughes, Jim Stutso, Jack Whittaker, and Troy Wills; and (Kentucky) Chrystel Blackburn, Tracy Frazier, James McAuley, Ed Neal, Phil O'Dell, Mark Sexton, Jim Tolliver, and Robert W. Ware.

[38] A "public water system" is a publicly or privately owned system supplying piped water to a community, a subdivision, or a mobile home park. The Environmental Protection Agency provides technical definitions for classes of public water systems, according to the number of connections, the number of users, and the duration of use.

Figure E-5. Location of McDowell County, WV, and Letcher County, KY



Data Source: ESRI

Table E-8: Case Study Data

McDowell County	Population, 1950: 98,887
	Population, 2000: 27,329
	Median household income, 2000: $16,931
Letcher County	Population, 1950: 39,522
	Population, 2000: 25,277
	Median household income, 2000: $21,110

Thus many people depend on untreated sources of unknown quality for their drinking, cooking, and wash water. Water testing programs have shown that many Appalachian water sources, when untreated, are in fact health hazards, contaminated with wastewater, pesticides, or heavy metals. In addition to its being contaminated by human activity, water quality may be degraded by naturally occurring substances. Particularly in the Appalachian coalfield region, residents may be required to pump groundwater that has unpleasant if not harmful qualities; it stains clothing red (because it contains iron) or reeks like rotten eggs (because it contains sulfur).

Even in communities served by public water systems, many of the systems have undersized, aging lines and treatment facilities and are hard-pressed to supply the existing population cluster, let alone to broaden coverage to a dispersed rural population. In numerous areas a declining customer base for water utilities, the result of emigration from central Appalachia to areas of the nation with better economic opportunities, precludes sufficient revenues to upgrade or expand service.

Yet McDowell and Letcher counties, like other parts of the longest-mined areas in Appalachia, also contain aquifers of high-quality potable water, plentiful and free from harmful characteristics that might serve a much greater population than present if managed in a sustainable manner. The difficulty lies in making this water available to the population economically, either through community or neighborhood water systems or public systems of larger scale.

Of equal importance is the problem of wastewater disposal. Entire towns and rural households that lack wastewater treatment systems discharge raw wastewater directly into rivers and streams through open lines known as "straight pipes." Onsite septic systems often are impractical because of small lot sizes or unfavorable conditions of the local soil or bedrock geology. The lack of proper wastewater disposal promotes environmental degradation and creates potential health hazards, including contamination of drinking water sources.

The problems of water supply and wastewater disposal are inextricably linked. Per capita rates of water use in "self-supplied" households (those that supply their own water) are far less than in households connected to public water systems.[39] Providing public water system service to self-supplied households without sewer connections greatly increases domestic water use and therefore production of untreated wastewater, thus further degrading surface and groundwater quality. Ironically, because wastewater discharges provide much of

[39] Estimates for water use in Kentucky in 1995 were 50 gallons per day per capita by self-supplied users and 70 gallons per day per capita by users on public systems. Wayne B. Solley, Robert R. Pierce, and Howard A. Perlman, *Estimated Use of Water in the United States in 1995*, U.S. Geological Survey Circular 1200 (Washington, D.C.: U.S. Government Printing Office, 1998). The authors note, however, "Self-supplied domestic systems are seldom metered and few data exist" (p. 24). Data on water use by self-supplied households collected for twenty-six rural Appalachian households in Kentucky indicated a mean per capita consumption of less than 22 gallons daily. This study concluded that difficulties in obtaining water promoted rigorous conservation measures. Gary A. O'Dell, "The Search for Water: Self-Supply Strategies in a Rural Appalachian Neighborhood (M.A. thesis, University of Kentucky, 1996).

the flow of surface streams in McDowell and Letcher counties during dry months, replacing straight-pipe discharges with sewer connections may result in shortages of flow to plants that extract and treat surface water for public water systems. So the issues of water supply and wastewater disposal must be addressed simultaneously.

The greatest obstacle to provision of water and wastewater services in McDowell and Letcher counties is financial, and it has several dimensions. Water and wastewater projects are enormously expensive, particularly in Appalachia because of the rugged terrain. Funding sources are limited. The costs of connection to water and wastewater services, and the monthly charges necessary to repay loans, often are prohibitive in the economically distressed Appalachian counties where per capita incomes are among the lowest in the nation. For example, the community of Dayhoit, in Harlan County, Kentucky, was provided with a public system gratis, with no initial connection charge, by a manufacturing company that had been held legally responsible for chemical pollution of the local aquifers. Even so, within a few years, many of the initial customers had discontinued service and gone back to using traditional sources such as wells because they could not afford the monthly service fees.[40]

In West Virginia and Kentucky, as in many other states, agencies have established structures to assist communities with infrastructure development. The West Virginia Infrastructure and Jobs Development Council disburses state matching funds for water and wastewater development, and eleven regional planning and development councils serve as planners and financial facilitators for their respective regions. The Kentucky Infrastructure Authority allocates the 20 percent state match for projects funded by either of the two Environmental

[40] Phillip W. O'Dell, Kentucky Division of Water, personal conversation, 1999.

Protection Agency (EPA) state revolving funds; the funds are derived from an ad hoc bond issue incorporated in the annual state budget.[41] Fifteen local area development districts (ADDs)—public corporations consisting of elected officials, technical experts, and local citizens—engage in regional planning and work with individual communities to obtain funding for projects.

Many of the water-quality problems experienced in coal country appear to result from numerous shallow wells that tap poor-quality aquifers near the surface rather than deeper aquifers of far better quality. A 1997 estimate for Letcher County projected an average cost of $10,700 per household to provide public water system service.[42] For less than half of this amount, a drilled well that taps deep aquifers while sealing off shallow, poor-quality water can be constructed.[43] Although individual wells may not be the best solution in many cases, the example illustrates the concept that small-scale innovative solutions tailored to localities may sometimes be more desirable than large public utilities. In McDowell County, the community of War acquired the aging and deteriorated city waterworks from a non-responsive private company, and with labor provided by citizen volunteers, it is installing a modern system. In Letcher County, water and wastewater development has been undertaken at the grassroots level, combining regionalization with locally tailored solutions. In each case an external, nongovernment organization served as a catalyst to motivate the population and facilitate the process. The observations and the conclusions presented in this case study are based on field experience and

---

[42] U.S. Department of Agriculture, *Kentucky Water 2000: A Plan for Action* (Lexington, Ky.: USDA, Rural Development, 1997).

[43] Estimates provided to the author in 1999 by three water well drillers located in Harlan and Letcher counties ranged from $2,500 to $4,000 for a complete well installation, including pump and filtration systems.

personal interviews with both civic authorities and ordinary householders undertaken during fall 1999 and updated by more recent communications with concerned people.

Characteristics of McDowell and Letcher Counties

Both McDowell County (538 square miles) and Letcher County (339 square miles) are mountainous, heavily forested, and relatively isolated regions in their respective states. They have similar socioeconomic histories: characteristics of local topography and geology fostered a legacy of resource extraction—timber and coal—that left each county largely devoid of the most fundamental infrastructure and economic opportunities. Many of the present-day communities were once coal camps, whose amenities were supplied according to the whim or the conscience of the coal companies. Once the companies withdrew their patronage , the camps were left poorly equipped to fend for themselves.

The socioeconomic situation in McDowell and Letcher counties is more or less typical of distressed counties in central Appalachia. The two counties have persistently been categorized as distressed since the Appalachian Regional Commission (ARC) began its system of classification of counties by economic status. Unemployment exceeds 10 percent.[44] About one-third of the population lives in poverty.[45] Further, per capita market income is only $7,951 in McDowell County, $10,465 in Letcher County.[46] Paralleling the decline of employment in the coal industry, populations have steadily decreased, McDowell County's from

[44] U.S. Department of Labor, Bureau of Labor Statistics, 1999–2001.

[45] Census Bureau, Census, 2000.

[46] U.S. Department of Commerce, Bureau of Economic Analysis, 2000. "Per capita market income" is per-capita income less transfer payments. Average per capita income for the United States in 2000 was $25,676.

nearly 100,000 fifty years ago to about 27,000 today, Letcher County's from nearly 50,000 to about 25,000.[47]

A declining population means a declining tax base, particularly when a lack of financial resources in the population discourages investment in maintenance of existing commercial and residential structures, let alone new business ventures and new construction. Accordingly, infrastructure development also has lagged. Although the coal companies often provided minimal environmental services such as water supply systems and rarely provided wastewater treatment facilities, physical facilities in many cases are generations old and deteriorating. The greater part of the population, however, has never had access to such amenities and today still follows traditional ways, obtaining water wherever possible from local sources and discharging untreated waste into rivers and streams.

Water and Wastewater Services in McDowell County

Framed in a box at the top-left corner of the *Welch Daily News* is the perennial appeal:

McDowell County Needs

Jobs

Modern Highways

Affordable Sewage Facilities

Affordable Quality Water Systems

In March 1999, Shirley Auville, resident of Iaeger and proprietor of the automobile junkyard south of the community, ticked off the local water supply

[47] Census Bureau, Census 2000.

problems on his fingers: "Starting at Long Bottom and following the road, all the wells are salt water—can't drink it. The new middle school has to treat for salt water from their well. About two miles from here, iron water starts. There is iron water in the wells at Johnnycake, Mohawk, Panther, Mile Branch, Ritter, Long Pole, Short Pole, Roderfield, and Redbird. From Bradshaw down to Virginia is iron water. On Coon Branch Mountain they don't have any water at all; they have to catch water in cisterns."

Auville continued his assessment, moving from the rural sections to the town systems: "Bradshaw has good water; so does Welch (the county seat)—the water has a good taste. Davy has iron water; it has a bad water system . . . Iaeger has real bad water. It has a nasty taste. There is iron and barium in it, and the pressure is always weak."

About Brushy Fork Mountain, near the county's southern boundary with Virginia, Kirk Easterling observed, "Everybody . . . has water problems. Most folks have cisterns; they catch rain water or haul water. The wells don't yield much, but the water quality is okay. A few people have springs out of the sandstone." His neighbor, David Hughes, uses water from a spring that flows from the opening of an abandoned drift mine, is collected in a 2,500-gallon tank, and is pumped uphill to his mobile home. Last year Hughes had to purchase three loads of water in the summer because the spring flow had dwindled to a trickle.

Water is literally precious up on the mountain. Easterling estimated that about a dozen families on his road purchase water, paying as much as $60 per load for two or three 2,000-gallon loads per month from a private hauler. The Bradshaw Fire Department hauls water for people in need, accepting "donations" of about $40 per load to offset vehicle maintenance costs.

Al Corolla of the Bradshaw Fire Department confirmed that the department receives as many as fifteen calls per week during the dry months, July through October. Using two trucks, it can transport two or three loads in the evening after regular work hours. "We tell people that the water is to be used only for washing, not drinking, but we have no control over what they do after the delivery," said Corolla. The department received about $4,500 in water-hauling donations in the previous year—just "barely enough to pay for vehicle maintenance," Corolla noted. He would like to end the program of hauling water because it is too hard on the vehicles, but "we probably won't because people have no other way to get water." Bradshaw has good water and wastewater facilities. Its system is small, serving a population of about 280, but all the main lines are new, installed in 1985, and the wastewater system is only nine years old.[48]

Municipal wastewater treatment is a relatively new development in McDowell County. Onsite disposal of waste has been the prevailing mode, at best through septic systems that often are inadequate for the terrain, but more commonly discharged in raw form through straight pipes into the nearest stream. Until the mid-1990s, only the town of Gary, with a population of 900, was equipped with a wastewater system. Like so many other communities in McDowell and other coalfield counties, Gary was a company town. Gary's former patron, the United States Steel Corporation, was more concerned with community welfare than many mining companies, and it equipped the town with a wastewater treatment plant. In the county seat of Welch, with a population of about 2,600, wastewater treatment did not begin until a $13.5 million plant came on line in November

[48] Population figures for communities in McDowell and Letcher counties are from Census Bureau, Census 2000,

1997, mandated by court order. Previously, all wastewater was piped straight into the Tug Fork River that runs through the town.

An $8.7 million treatment plant was constructed for War (population 780) and the nearby village of Warriormine in 2000. Funded by the U.S. Department of Housing and Urban Development (HUD), the grant was unique in West Virginia in allocating funds for household connections. The innovation was necessitated by the extreme poverty of the county. Furthermore, a special dispensation allowed the work to be performed by local rather than outside contractors.[49]

Despite such infrastructure gains, in all of McDowell County in 2004, only these four communities—Bradshaw, Gary, Welch, and War, representing about 21 percent of the total population—treated wastewater.[50]

Many community systems supplying drinking water in McDowell County are aging legacies of the boom years of coal mining, built and operated by the coal companies to serve the workers in company towns. When the markets for coal collapsed and companies pulled out, private operators took over the water systems. For a time, operations were profitable. However, constant erosion of the customer base, the result of long-term population decline in the county, has put most of these systems in the red.

The situation in War reflects the larger predicament of the county. At a public hearing in March 1999, officials of the community sat down with the owner of the privately owned War Water Works and a representative of the West Virginia Planning and Development Council to resolve the community's water-supply

[49] Dr. Thomas C. Hatcher, mayor of War, personal conversation, 14 June 2004.

[50] West Virginia Infrastructure and Jobs Development Council, *Public Water Systems and Public Wastewater Systems Inventory And Needs Assessment Report* (Charleston: the Council, 2002).

problems.[51] In October 1998 the city had filed a grievance against War Water Works with the West Virginia Public Service Commission. In response, War Water Works offered to sell the business to the city. The city, then constructing its first wastewater system to replace straight-pipe discharges, considered the proposal. The water lines were seventy-five years old, and the company had virtually no other physical assets, not even an office building. It had made no improvements or upgrades in the infrastructure in decades. There were only two 6-inch main lines in town; all others were 4- or 2-inch lines. "Any house that catches fire in War burns to the ground," said Mayor Thomas C. Hatcher, " because there is not enough water to fight [fires]." Two sections within the city limits, had no water service at all, after more than forty years of resolute petitioning. One of the sections, Middleton, threatened to secede from the city over this issue.

War had three options: (1) purchase the waterworks for a sum that would burden the city with debt for years to come; (2) allow the water system to remain in private hands; or (3) negotiate purchase of the system by the McDowell County Public Service District (PSD), an agency that had been acquiring and upgrading local community water systems for several years.

Of the 294 nonprivate water systems in West Virginia, 143 are PSDs, operated on a county level by county governments.[52] Since its inception in 1990, the McDowell PSD had been taking over and upgrading small private community systems in trouble, one or two at a time, and building new treatment plants as

---

51 The following account is derived from notes taken by the author at the hearing, 22 March 1999, and in a prehearing interview with Mayor Hatcher, 22 March 1999.

52 , D. Jarrett, Annual Statistical Report: Statistical Data on Public Utilities in West Virginia (Charleston: Public Service Commission of West Virginia, 2003).

needed. Typically these small plants, often using groundwater extracted from deep abandoned mines, had cost $1.5 million–$3.5 million each, with funding provided by loans and grants from ARC and the Rural Utilities Service of the U.S. Department of Agriculture (USDA–RUS). Funding of this sort is generally unavailable to operators of private systems. Currently the McDowell PSD systems serve about 1,700 households in sixteen small communities. Planning is concerned with upgrading or extending service to the small but relatively dense settlements represented by the former mining camps. Any provisions for addressing the needs of the dispersed rural population remain in the distant future.

One of the PSD's acquisitions, in March 1999, was City Water Inc., of Iaeger. If ever a community had severe water problems, Iaeger fit the profile. Not only was the physical infrastructure in terrible shape, but the health hazard from a high natural barium content in the water source prohibited its use for any domestic purpose but flushing toilets. The citizens of Iaeger had a water system in name only, for they could not use the water. Following the acquisition, a new well solved the barium problem, and replacement of the distribution system will soon be made possible through USDA–RUS funding and a pending community development block grant from HUD.[53]

Another high-priority area for future PSD activity is Gary. The municipal system of this town pumps more than a million gallons per day, but more than 95 percent of the water is lost through line leakage. Gary and the county PSD plan a joint renovation of the water system and expansion of coverage to communities eastward.

---

[53] David Cole, West Virginia's Region One Planning and Development Council, personal conversation, 23 April 2004.

Consequently, purchase of the War Water Works by the PSD was a viable option. Yet no matter who came into possession of the water system in War, water rates were projected to more than double. At the March 1999 hearing, the water plant operator presented a plan for a "vigorous" renovation and upgrade of the existing system. According to his calculations, an incremental expenditure of nearly a million dollars would be required to refurbish the plant and replace the main lines. The rate increases necessary to pay for the improvements would result in an almost immediate doubling of the then-current $18.55 monthly base to reach a level of more than $44 by the tenth year succeeding.

As the hearing proceeded, it became increasingly clear that the city was not, at that time, inclined to acquire the water system. "We are willing to work with either the water system owner or the PSD," Mayor stated. "All we want is drinkable water." The hearing concluded without a definite plan of action being established.

Inertia of this sort can sometimes be overcome by the influence of a third party, a nongovernment entity that can act as a negotiator, a motivator, and an organizer of resources. In February 1999, West Virginia Governor Cecil H. Underwood, specifically acknowledging the magnitude and the severity of McDowell County's problems in developing infrastructure, announced the initiation of a program to engage the local population in solving the problems. With financial assistance from ARC, the state engaged the Rensselaerville Institute, of New York, to implement leadership programs in McDowell County directed toward self-help and community development activism.[54]

The Rensselaerville Institute, which refers to itself as "the think tank with muddy boots," is a nonprofit, independent organization dedicated to helping

---

[54] West Virginia Development Office, 9 February 1999.

low-income communities achieve concrete results with limited resources, using self-help and volunteerism. The institute's outcomes-focused development philosophy is based on the premise that local knowledge and grassroots initiatives often provide better, faster, and less expensive solutions than the conventional dependence on outside experts and millions of state and federal dollars ineffectively applied. The institute seeks out "human sparkplugs"—motivated residents with ideas and leadership potential—to build community capacity and make local improvements with volunteer help from citizens. Such improvements may be small projects that can have a large impact on a community, or large efforts, such as solving drinking water and wastewater problems. Nationwide the institute has assisted more than 300 towns and neighborhoods in obtaining or upgrading water and wastewater systems using the self-help approach.[55]

Collective action in McDowell County was made even more difficult by an ingrained sense of dependency, the product of a historic tradition of coal company paternalism and the physical and cultural isolation of McDowell County from the state administrative center in Charleston. Water and wastewater development in the county, as in most of the nation, progressed through a strictly top-down approach. Government officials and technical experts at the state level decide on priorities and procedures for implementation. This approach fostered in citizens a perception of detachment from the decisions that affect their lives. Although citizen involvement was officially encouraged, primarily through hearings, there was little evidence of grassroots participation. The March 1999 hearing in War, for example, was attended by only two persons from the community other than the local officials involved. Many people in the

[55] Rensselaerville Institute website, at www.rinstitute.org

county were concerned about water quality and availability, but they had little faith in either the solicitude of the state government or its ability to provide solutions.

At the governor's behest, the Rensselaerville Institute began by presenting a series of countywide workshops on leadership development and self-help.[56] Officials and citizens of War who attended were intrigued and decided to work first on two small-scale youth projects, involving local talent to stimulate young people's interest in science and music. The success of the youth projects encouraged citizens to tackle a larger undertaking, the longstanding problem of the Middleton neighborhood's lack of water supply. With funding provided by both the city and, somewhat reluctantly, the water company, during spring 2002 more than fifty residents of Middleton volunteered their time to dig ditches and lay new water lines to each household. By June the project was complete, and Middleton now is served by the city water supply for the first time in its history.

Success in this endeavor and the substantial cost savings achieved through citizen involvement encouraged optimism for a long-term solution to the city's water problems. In June 2000, War filed an another grievance against War Water Works to allow the purchase of the water system by the city, a plan that was opposed by the McDowell PSD. Hearings were held before the West Virginia Public Service Commission in 2003 to determine the ultimate fate of the War water system. At the hearing, strong citizen opposition to PSD acquisition became apparent. The perception was widespread among residents that the PSD had little concern for the needs of the people of War. Water rates charged to customers in other PSD–operated systems in the county were considered

[56] The following account of events in War and its involvement with the Rensselaerville Institute is derived from personal conversation with Mayor Hatcher and Jim Stutso, War director for Water Works, June–July 2004.

outrageous. War citizens had no desire to pay high rates for water provided to the community as a consequence of subsidizing water line extensions elsewhere in McDowell County.

The Public Service Commission ruled in the city's favor, and system ownership was transferred to the community in November 2003. An HUD block grant of $20,000 provided a down payment on the total purchase price of $250,000. War is currently conducting an engineering study to determine the cost of installing an entirely new water system to replace the ancient, undersized, and deteriorated plant and lines. Funding will be provided by a combination of sources, most likely HUD, ARC, and the state's Abandoned Mine Lands program. Civic participation in the project with encouragement and coordination by the Rensselaerville Institute will save an estimated 25 percent in costs relative to the price tag if the project was presented for bids. As Mayor Hatcher observed, "We have a lot of retired miners here, an able-bodied labor pool."

Water and Wastewater in Letcher County

The late James McAuley, proprietor of a small store in Kona, Kentucky, liked to tell a story that he swore was true. Coal mining, he said, has damaged or destroyed many good water sources in Letcher County over the years. Extension of deep mine tunnels often "cut the bottom out" of drilled wells, so a person (or community) might have plenty of water one day and nothing but a dry empty hole the next. McAuley told of a man whose well went dry, and as he stood over the borehole bemoaning the fact that he no longer had any water, a voice issued from the bottom of the well saying, "We've got plenty down here!"

Whether this particular tale is true or not, many residents have reported hearing muted voices and machinery noises coming from the underground mines that intersected their now-destroyed water wells. Kentucky law currently

requires that mining companies replace a damaged water supply within forty-eight hours.

At the end of the twentieth century, only about one in four Letcher County households had access to a community water supply or connection to a sewer line. Letcher County contains six municipal water systems: Whitesburg, the county seat (population 1,600), Fleming-Neon (population 840), Jenkins (population 2,400), Jackhorn (population 200), and Blackey (population 150). Also, there are several water districts in the county, which purchase water from these systems. Public sewers serve only Whitesburg, Fleming-Neon, and Jenkins.[57] Jenkins, like Gary in McDowell County, was a model coal camp, where a civic-minded company provided basic environmental services.

Across the county, however, many rural residents cope with marginal water supplies often tainted by iron and sulfur that leave fixtures and clothing indelibly stained and reeking of rotten egg, while thousands of straight pipes discharge wastewater to rivers and creeks. For years, local and regional newspapers have regularly featured stories with headlines that typically read as follows:

- Officials Investigate Sources of Sewage in Kentucky River[58]
- Sewage Going into Streams Draws Concern[59]
- Sewage Problems Hurt Health, Growth in Eastern Kentucky[60]
- County Men Study Water, Sewer Needs[61]

---

[57] Governor's Water Resource Development Commission, *Water Resource Development: A Strategic Plan* (Frankfort, Ky.: the Commission, 1999). Available at http://wris.ky.gov/wrdc_plan .

[58] *Letcher County News Press*, 16 June 1993.

[59] *Whitesburg Mountain Eagle*, 30 June 1993.

[60] *Louisville Courier-Journal*, 2 December 1996.

- Lack of Clean Water Hampers Letcher County Development[62]

The North Fork of the Kentucky River originates in Letcher County and supplies water to Whitesburg and many downstream communities in the state. Advisories against swimming in the river, prompted by high levels of fecal coliform bacteria, have been in place since intensive testing began in 1991. Even simple contact with the river water is considered a health hazard.[63] Health statistics indicate that the average annual incidence of hepatitis A, a waterborne disease, is significantly higher in Letcher County than in Kentucky and nearly double the national incidence.[64] The leading sources of the bacterial contamination are defective septic systems and illegal straight pipes.

In 1992 in part of Letcher County, employees of the state Division of Water and the Kentucky River District Health Department conduction an inspection, walking many miles of river and streams. Straight pipes counted during the inspection ranged from 1 per stream mile to as many as 16, for a total of more than 1,000 in the areas surveyed. Various estimates have since placed the total number of illegal straight-pipe discharges in Letcher County at 3,000 –6,000.[65] According to Dr. Rice Leach, commissioner of the Kentucky Department for Public Health, the prevalence of straight pipes is attributable to several factors.[66]

---

[61] *Whitesburg Mountain Eagle*, 15 May 1996.

[62] *Whitesburg Mountain Eagle*, 12 March 1997.

[63] Swimming Advisories in Kentucky (last updated 2 July 2004), Kentucky Division of Water website, available at www.water.ky.gov/sw/advisories/swim.htm.

[64] *Whitesburg Mountain Eagle,* 6 March 1996.

[65] *Whitesburg Mountain Eagle*, 18 November 1992, 24 July 1994, (author not identified), *Lexington Herald-Leader*, 30 June 1997.

[66] *Whitesburg Mountain Eagle*, 30 June 1993.

A 1993 survey determined that more than 90 percent of all new homes in Letcher County are mobile homes. Available financing packages do not include septic and drain field systems, which must be financed separately. The average cost of a septic system installation in Letcher County at the time was estimated at $1,700. Also, mobile home lots often are very small, with little room for a drain field. Further, there is a regional tendency toward "do-it-yourself" undertakings without benefit of a licensed plumber. It is complemented by the lack of zoning and building codes.

The situation regarding water supply and wastewater disposal in Letcher County had become of great concern to local and state officials. Water supply planning was addressed first, as part of a state-coordinated, county-based planning process implemented through the local ADDs. The County Water Supply Program grew out of the 1988 drought, when many communities across the state were forced to ration water. Responding to this emergency, then-governor Wallace Wilkinson issued an executive order creating a Water Supply Task Force. Building on task force recommendations, in 1990 the Kentucky legislature passed a law mandating development of long-range plans for county water supplies.

Each county plan was submitted to the Kentucky Division of Water in two phases. Phase I involved data collection and analysis to project which water systems would be adequate for the next twenty years. Phase II included (1) quantity of water plans (2) plans to prevent contamination from impacting the water source, (3) emergency response plans if contamination should occur, and (4) plans to manage drought. The deadline for completion of these plans, originally in 1998, was extended to July 15, 1999. As of April 1999, all ten counties in the Kentucky River ADD, including Letcher, had completed both Phase I and Phase II. Clearly the concern for water supply in this area was

strong: on the same date, 75 percent of the counties in other ADDs had not reached this stage; fifteen counties had yet to submit even their Phase I plans.[67]

The resulting planning document, submitted in projected water supply development in Letcher County as a gradual process of extending lines outward from existing suppliers to certain adjacent and relatively dense population concentrations over the next two decades. The water sources for both Whitesburg, the largest water utility in the county, and Jenkins, were deemed inadequate for expansion, so alternative sources had to be located. The plan recommended that Jenkins (then dependent on a small reservoir) seek connection to a Pike County system and that Whitesburg (then withdrawing water from the North Fork of the Kentucky River) develop nearby flooded mines. Under the plan the needs of the dispersed rural population would remain unsatisfied indefinitely.[68]

Up to this point, the planning process had proceeded according to a typical bureaucratic model in which regulatory officials imposed mandates on local officials, who then hired technical experts to meet those requirements. In this traditional top-down approach, there is little direct input from those who will be most affected by implementation of the plans—ordinary citizens. The Letcher Water Supply Planning Commission consisted of 4 community mayors, 1 representative from a minor water supplier, 1 county-judge executive, and 1 representative of the District Health Department. Limitation of citizen participation was not a matter of intent on the part of the planners, but a

---

[67] Information obtained from Water Resources Branch, Kentucky Division of Water.

[68] Kentucky River Development District and Commonwealth Technology, Inc., *Final Plan Document and Plan Formulation Document Long-Range Water Supply Plan, Letcher County, Kentucky* (Hazard, Ky.: the District, 1996).

consequence of the way in which traditional planning is conducted. First, many officials proceed on the assumption that they are the elected representatives of the people and their views of the official are *de facto* the views of the people. Such an assumption overlooks the creative potential inherent in local knowledge and expertise and a diversity of opinions. Public input is officially encouraged only through public hearings, which in the case of the water supply planning agenda were held at the ADD offices in Hazard, a location sufficiently distant to preclude participation by people of limited resources.

Ultimately, Letcher County chose not to follow the traditional planning process. It took a different path, with the goal of providing water and wastewater services to a greater proportion of the county within a shorter span of time. It accomplished the planning and initial implementation stages by working from the bottom up—that is, from the grassroots level of ordinary people and local officials creating a shared vision rather than responding to an external mandate. The people of Letcher County were a fertile soil in which ideas of empowerment sprouted fruitfully.

The seeds of civic capacity were planted and nourished by a regional nongovernment organization, the Mountain Association for Community Economic Development (MACED), headquartered in Berea, Kentucky. In fall 1995, MACED, equipped with matching funds from the state Division of Water, sponsored a program in Letcher County to find ways to deal with the local problems of wastewater disposal. Brady Deaton became the coordinator of a group of interested local citizens in Letcher County, known as the North Fork Clean Water Project, and began working to convince rural homeowners to upgrade existing systems or install some alternative methods of wastewater treatment, such as constructed wetlands or peat systems. Incentive was provided in the form of cost-sharing by MACED, through which eligible people could

obtain up to 75 percent of the money necessary to install a system or make repairs. Another organization, Homes, Inc., helped owners finance their part of the cost with low-interest loans and low monthly payments.[69]

The North Fork Clean Water Project was originally intended to deal only with the wastewater problem, but it soon took on a life of its own and a greatly expanded mission because of the many needs of the local population. From the original organization, another citizens group formed in 1996, called the Letcher County Action Team, to address a wider range of social issues in the county. Subsequently the North Fork Clean Water Project operated as a subsidiary of the Letcher County Action Team. Much interest and energy was generated in Letcher County as a result of the activities of the North Fork Clean Water Project and the attention from state officials and the media concerning the unwholesome condition of the county's water.

Two other developments, which occurred early in 1996, were to have profound and lasting effects on Letcher County's water and wastewater situation. First, the Letcher Fiscal Court passed an ordinance requiring all certified electrical inspectors to receive a notice of release from the local health department before approving the electrical wiring in any new structures. This simple measure allowed the health department to ensure that all new construction in the county had adequate wastewater disposal.[70] Second, County Judge-Executive Carroll Smith appointed a study group of six people to examine the county's water and wastewater problems and make recommendations. Two members were chosen

---

[69] *Whitesburg Mountain Eagle*, 6 December 1995.

[70] *Whitesburg Mountain Eagle,* 13 November 1996.

from the North Fork Clean Water Project sewer grant committee, one of whom, Kona storekeeper McAuley, became chair.[71]

The ordinance requiring inspectors to obtain a release from the health department before approving electrical work proved tremendously successful. Septic system permits doubled after the ordinance went into effect.[72] Impressed, State Senator Barry Metcalf introduced legislation modeled after the Letcher ordinance that was passed by the 1998 Kentucky General Assembly, mandating health department approval before electricity is provided to new construction.

In mid-May 1996 the study group presented its conclusions to Judge-Executive Smith, recommending the formation of a countywide water and wastewater district. In the countywide district, communities with existing systems would retain control of their own systems, including revenues, contracting with the district to supply service to outlying areas. A county system would eliminate much of the resistance to community system connection expressed by rural residents who feared that annexation would increase their tax burden. Later that month the Letcher Fiscal Court passed a resolution authorizing the county attorney to work with the citizens group to lay a framework for a countywide water and wastewater district. The real work was ahead: formalizing the details of the plan and persuading the state Public Service Commission to allow the district to be created.[73]

At the initial Public Service Commission hearing in March 1997, the application was denied. The commission operates under a mandate to prevent proliferation of water utilities if preexisting water suppliers can serve the

---

[71] *Whitesburg Mountain Eagle*, 15 May 1996.

[72] *Whitesburg Mountain Eagle*, 16 July 1997.

[73] *Whitesburg Mountain Eagle*, 15, 29 May 1996.

proposed area. A feasibility study by commission staff had concluded that an expanded Whitesburg system could serve a larger population.

The ruling was appealed on the basis that the Whitesburg expansion postulated by commission staff would serve only a small portion of the area proposed for the countywide district. At a second hearing, in April 1997, the commission reversed its findings and ordered the creation of the Letcher countywide water and wastewater district, the first of its kind in Kentucky.[74] In June, responsibility for the proposed new district was formally transferred from the study group to a commission. McAuley was elected chair and served in that capacity until his death in February 2004.[75]

According to the plan developed by the Letcher study group with some expert assistance from numerous professionals, the district will expand in phases based on identified priorities. First, it will extend wastewater service to areas that receive their water supply from municipal systems but not wastewater service because of lack of funds, staff, and resources. The district will use the excess capacity of wastewater treatment plants in Whitesburg and Fleming-Neon. Second, because the flow of the North Fork of the Kentucky River is insufficient during the summer months, the district will develop a separate water source with a capacity of 4 million gallons per day and a storage capacity of 600 million–800 million gallons to provide a 200-day supply. Third, the district will extend water and wastewater service to densely populated regions of the county such as Mayking and Millstone.

These three initial phases would provide water to 56 percent of the county and wastewater to 53 percent, including the currently served population. The fourth

---

[74] *Whitesburg Mountain Eagle*, 18 May 1997.

[75] *Whitesburg Mountain Eagle*, 2, 16 July 1997; Don Profitt, current chair of the Letcher County Water and Sewer District, personal conversation.

priority will be to provide service to parts of the county where the housing density is 10 per mile or greater. Finally, the district will construct alternative wastewater plants for settlements in small valleys containing 15–40 houses. This phased approach was deemed necessary because it is unlikely that all of the money needed will be available at one time. Construction priority is based on "the greatest need of the people and the environment." Should sufficient funds become available, phases might be constructed simultaneously.[76] The primary guiding philosophy of the district is to share county resources so that local excess capacity does not go unused.

Thus the Letcher County Water and Sewer District came into being. The new district had scarcely a dime in financial resources, yet the projected cost of the project exceeded $55 million. Funding began to trickle in, some from traditional sources, some from quite unexpected directions. Blackey received funding from ARC and USDA–RUS to build a $2.87 million water plant to replace the town's reliance on wells, many of which were found to be contaminated. The Kentucky PRIDE project was launched in June 1997, the creation of U.S. Representative Hal Rogers from Somerset, Kentucky. PRIDE stands for Personal Responsibility in a Desirable Environment and is tackling the problems of wastewater and open dumps in eastern Kentucky.[77] The North Fork Clean Water Project was phased out, and PRIDE adopted its goals for Letcher County. The county received two grants from PRIDE: $568,000 to Whitesburg to extend wastewater lines to twenty-two homes outside the city with adequate water but faulty septic systems or straight-pipe discharges, and $328,000 for an alternative wastewater disposal system for a cluster of thirty homes at Millstone. Recently the Kentucky River

---

[76] *Whitesburg Mountain Eagle*, 28 August 1997.

[77] *Lexington Herald-Leader*, 30 June 1997.

Authority approved funding for the required match ($109,000) for the Millstone Demonstration Project. Further, Representative Rogers worked hard—and successfully—in Washington to secure more funds, obtaining an additional $1.5 million for Letcher County (attached to the bill that renews funding for EPA).[78]

The district had a bold plan, but it faced a great obstacle: locating a water source sufficient for the needs of an entire county. Letcher County is headwaters for many streams but has no large bodies of water. Existing water supplies are nearly strained to capacity. For a time, opinion favored tapping the supposedly vast water reserves in some local underground coal mines that were flooded, but the idea was discarded after some disappointing pumping tests and the objection of the state Division of Water. Consequently, sources external to the county had to be secured. The most abundant supply will be obtained from a proposed surface-water impoundment in adjacent Knott County. The new Carr Creek Water Commission, of which the Letcher Water and Sewer District is a member, will serve communities in three eastern Kentucky counties. Funding for the $7 million project has been obtained from ARC, USDA–RUS, EPA, and an HUD block grant.

The district has jurisdiction over the entire county outside the four municipalities of Whitesburg, Jenkins, Fleming-Neon, and Blackey. As of this 2004, the Letcher County Water and Sewer District provides water to fewer than 200 households but is extending water lines along the highway from Blackey, which has excess capacity, through the rural neighborhood of Isom. This will add about 750 households initially, and when feeder lines are extended up the mountain hollows from the main line, the system will provide service to an additional 750 rural homes. Current district chair Don Profitt estimates that the

---

[78] *Whitesburg Mountain Eagle*, 1 April, 28 October 1998.

district will be able to provide water to nearly 4,000 households within five years.[79]

So through a combination of efforts at the lowest and highest levels, Letcher County's vision of a countywide, unified water and wastewater system is becoming a reality. There are still obstacles, but the grassroots energy and creativity that brought about the district is finding innovative ways to get around them. Christel Blackburn, who served as coordinator of the North Fork Clean Water Project from 1997 until the organization disbanded, observed, "Our mission here was to build citizen capacity to get good water and sewer," she says, "not specifically to form a countywide district. You can't cookie-cut what happened in Letcher; it was driven by personalities."[80]

Yet others have observed the Letcher experience and applied the lessons. Other county action teams, sponsored by MACED, have been formed in eastern Kentucky, and at least one action team, in Breathitt County, wants to emulate the Letcher County model and form a countywide system. The state continues to encourage regionalization of water and wastewater systems. Blackburn notes, "The Division of Water has the attitude of being very responsive to citizen participation."[81]

Implications for the Future

In McDowell and Letcher counties, the goals are the same: safe drinking water and proper wastewater treatment for all citizens. Citizen activism in McDowell

---

[79] Don Profitt and Jack Martin, Letcher Water and Sewer District, personal conversation, July 2004

[80] Christel Blackburn, North Fork Clean Water Project, personal conversation, 3 April 1999.

[81] *Ibid.*

County is community-based, whereas in Letcher County, grassroots involvement is county-based and has involved a more holistic approach of cooperative needs assessment and resource sharing. In both cases the harnessed energy and enthusiasm of citizen volunteers appear likely to achieve the ends. In Letcher County, though, they may be accomplished sooner because the novelty of intercommunity cooperative infrastructure development attracts attention. The Letcher County approach has served as a stimulus to the brokers of political and economic power to find innovative ways to make development happen.

As Letcher County activist Blackburn noted, there is no "cookie-cutter" solution; no one-size-fits-all model for infrastructure development in Appalachia's distressed counties. Although an outsider might perceive all these counties to be alike in their rugged topography, their legacies of physical isolation and their social and economic impoverishment, they vary considerably in these and many other aspects. The lessons from Letcher and McDowell counties are intended not to provide templates for indiscriminate application elsewhere but to show what can be accomplished when a sufficiently motivated citizenry evaluates local circumstances to produce locally based solutions.

What does this mean in practical terms to policy makers? If no single model can or should be used, how can the experience of McDowell and Letcher counties be applied? One framework that may be useful for integrating the two approaches is to consider them in terms of scale: micro versus macro, or local versus regional. The micro approach addresses the specific local needs of a community or neighborhood, such as motivating volunteers to help install water lines in the Millville neighborhood of War. The macro approach undertakes to build infrastructure for a region, which may be a single county, as the Letcher County Water and Sewer District is doing, or a larger unit, as the multicounty Carr Creek Water Commission is doing. Governments, of course, employ both

micro and macro solutions in development. A more desirable alternative to top-down development is to encourage and integrate citizen participation at both micro and macro levels.

From the McDowell and Letcher county experiences, therefore, certain key concepts can be extracted that may be used elsewhere as a foundation on which local solutions to local problems, not limited to water and wastewater issues, may be constructed. The first and most important concept is citizen participation at all levels in assessing, planning, and implementing development projects. This goes far beyond the traditional process in which citizen participation is adjunct rather than integral, limited to comments solicited at hearings and aired in the media after plans already have been made by groups of experts. The professionals, representing such areas as public health, law, engineering, geology, and the environment, have a significant and necessary role but should serve as advisers who work directly with citizen representatives to plan achievable goals. Experts may suggest options and alternatives but should remain receptive to ideas generated from the local populace. In other words, they should facilitate, not dominate.

Motivating citizens to participate in the decisions that affect their own lives and welfare can be a challenging task in any part of America. It may be particularly daunting in parts of Appalachia where paternalistic coal companies dominated social and economic life for so long. In such a situation, an outside, nongovernment organization such as the Rensselaerville Institute or MACED's North Fork Clean Water Project may serve as a catalyst, providing the impetus and the means for people to get together and begin the process of evaluating their needs and making decisions about solutions. As in the case of the Letcher County Action Team, the effort may grow to address concerns that far outrange the original area of interest.

A key element of Letcher County's long-range plan for water and wastewater services is its pooling of resources among the communities for the betterment of the general population, while allowing the communities to retain autonomy. The problems of water supply and wastewater disposal were of such great concern to all that communities were able to overcome traditional rivalries and isolationist attitudes. Each community system became a link in a larger complex of resource sharing. At the same time, support was gained from rural residents who, fearing the consequences of annexation if they were to connect to a city water system, were far more willing to participate in a county-based system.

Another important benefit associated with a grassroots citizen movement is that the local community in effect takes ownership of the developed infrastructure and is willing to provide the necessary continuing resources to operate and maintain its significant initial investment.

Citizen-based planning does not guarantee success, of course. The huge cost of building water and wastewater infrastructure remains a primary hurdle when these basic services are lacking for large areas in which construction costs are high and funding sources are limited. Moreover, areas that completely lack water and wastewater are not the only ones in need. Many Appalachian communities with a public water system are poorly served by aging and inadequate facilities. The solution is likely to require an approach that at first seems contradictory: not only regionalization of water supplies to take advantage of efficiencies of scale in the pooling of resources, but also funding and support of small-scale, strictly local, often nontraditional methods of supplying safe drinking water and treating wastewater. By this two-pronged approach, the majority of citizens—those living in communities and in the most densely populated rural areas—can be served by a large public system, and the more isolated residents, living in dispersed

mountain hollows where pipeline construction costs are prohibitive, can be served by small local facilities under the management of the regional system.

These small systems would provide water and wastewater treatment for clusters of perhaps a few dozen homes. Rather than attempting to build pipelines into every hollow and pump water hundreds of feet vertically up mountainsides, existing water resources of good quality might be tapped through the construction of well fields or the use of flooded mines. In some cases, funding for individual home wells might be the best solution, for field evidence indicates that many water-quality problems derive from shallow, hand-dug wells or improperly constructed ones.[82] Wastewater treatment might be accomplished through the use of properly built and maintained septic systems, on a community or an individual scale, or by alternative methods, such as constructed wetlands or peat filters.

In sum, one size does not fit all in delivery of water and wastewater, even in similar parts of the ARC region. There are however, four primary conclusions can be derived from the investigations in McDowell and Letcher counties:

- Water supply and wastewater disposal must be addressed simultaneously. In the absence of proper wastewater treatment, an increase in the number of people served by a water system dramatically increases the volume of raw wastewater released into rivers and streams.
- Water and wastewater planning should be conducted on a regional basis, although many small communities may require strictly local solutions because of economic considerations. A regional system can incorporate many water supply sources and methods of wastewater treatment under one umbrella.

[82] Kentucky Division of Water, *Gateway Area Development District Water Well Study* (Frankfort: Natural Resources and Environmental Protection Cabinet, 1988).

- Direct and continuous citizen involvement in the planning, implementation, and administration of infrastructure improvements provides benefits in the form of local knowledge, innovative solutions, and morale building through empowerment. Further, it may generate a willingness to tackle other local issues.
- Stimulating grassroots participation may require a catalyst—an individual or an organization that can provide encouragement and coordination in the early stages.